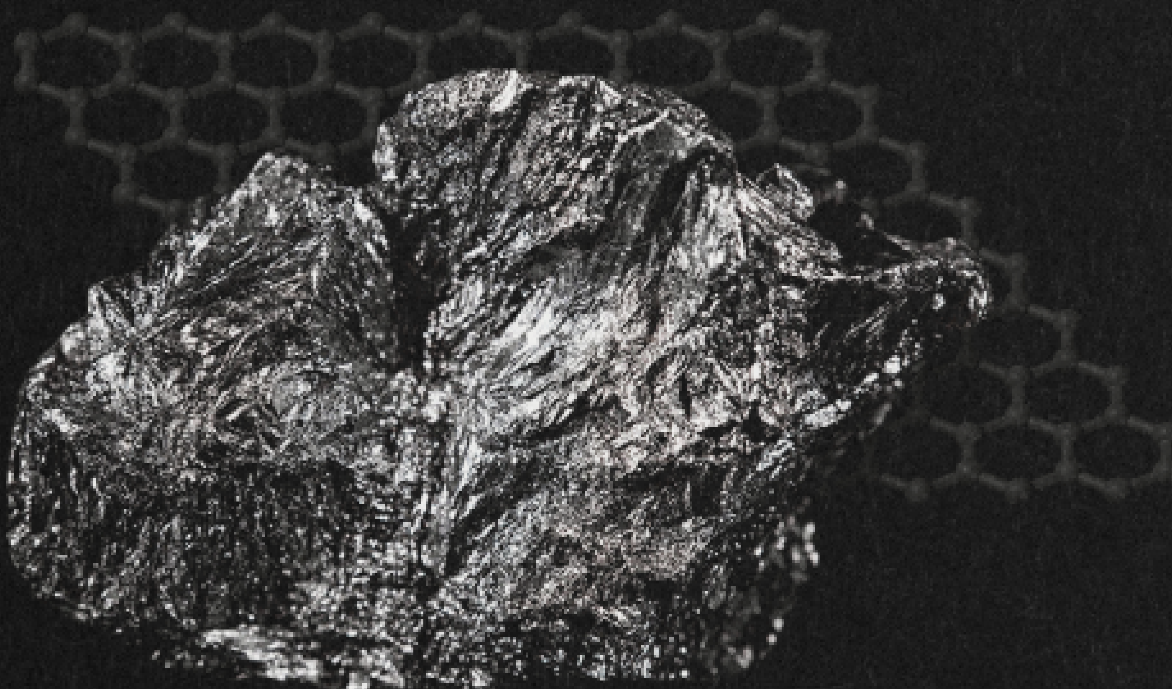
GRAPHITE OUTLOOK 2022

INNvestor Report



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Graphite Market Update: H1 2021 in Review

Here's an overview of the graphite market in H1 2021, and what market participants are expecting for the rest of the year.

Click here to read the previous graphite market update.

In 2021, the world continues the fight against the coronavirus, and as economies begin to recover, battery metals and their role in green energy continue to receive a lot of attention.

Some market watchers remain optimistic about the future of graphite and its use in electric car batteries — at least for the next few years. Both synthetic graphite and natural graphite, in the form of the intermediate product spherical graphite, are currently used in the anodes of lithium-ion batteries.

What has happened in the graphite market so far in 2021? Read on to learn about the main supply and demand dynamics in H1 and what market participants are expecting for the rest of the year.

Graphite market update: Key trends

Last year, the graphite market had to deal with the uncertainty brought by COVID-19, with demand from the battery space showing resilience. By the end of 2020, all eyes were on potential stimulus packages that could boost growth, as well as on what could happen in China in terms of supply constraints.

In early 2021, prices for natural flake graphite were slightly higher than expected as a result of unexpectedly strict environmental investigations and closures in China, said Suzanne Shaw of Roskill.

“There was also considerable shipping disruption early on in the year with containers and vessels not where they should be as routes reopened post-COVID,” she told the Investing News Network (INN). “Limited availability was prioritized for higher-value cargos, with lower-value raw materials flows disrupted. This situation subsided through Q2.”

Speaking about trends in the graphite market in the first six months of the year, George Miller of Benchmark Mineral Intelligence also said freight has been a real challenge for the industry this year.

“With a huge resurgence in demand for shipping from China to Europe and North America following COVID-19, delays and freight costs have skyrocketed, making it very expensive and quite complex logistically to ship graphite from China, where the majority of flake is produced,” he said. “In some cases, freight costs will double the total price of the material for end customers, especially for cheaper ‘commodity’ grades like -100 mesh, across all purities.”

Pricing has been relatively flat so far during 2021, according to Benchmark Mineral Intelligence data.

“Prices for +100 mesh flake concentrate, across all purities, have moved upward by around 5 to 10 percent year-to-date, while pricing for all other grades has moved less than 5 percent so far this year due to continued structural oversupply in the graphite market,” Miller said. “Moreover, the global shipping situation at the moment is hindering upward price pressure.”

Graphite market update: Supply and demand

Looking over to what’s ahead for demand, Roskill forecasts that total demand for both natural and synthetic graphite products will be around 1.58 million tonnes in the second half of 2021. That’s around a 3 percent increase on H1 of this year and a 13 percent rebound compared to H2 2020.

“The batteries sector will continue to increase strongly and underpin growth across the graphite industry,” Shaw said. “We are expecting demand growth in excess of 20 percent for the full year across all graphite battery products.”

For Miller, demand for natural graphite looks set to improve in H2 given the ongoing recovery of demand from the steel, automotive and construction industries to higher-than-typical levels.

"With electric vehicle (EV) sales typically stronger in H2 also, and following robust production and sales figures worldwide in H1 2021, we certainly expect improvements in demand from the battery market later this year," he said.

In terms of supply, Chinese production is expected to ramp up to meet rising domestic battery demand, as there is still a lot of overcapacity in China.

"However, the overall trend is that China is showing less appetite on the raw material side and investing in higher-value downstream industries rather than exploration/mining across most mineral sectors," Shaw said. "It will continue to increase its own imports of flake graphite."

China has considerable latent capacity when it comes to natural graphite supply, and as a result, Benchmark Mineral Intelligence expects this structural oversupply to continue. With state-owned metals conglomerate China Minmetals now engaged in supporting local producers in Heilongjiang province, there will continue to be new incremental capacity brought online if demand improves.

"That said, we still may see some tightness surrounding larger flake sizes, such as +80 mesh and +50 mesh flake concentrate, which is less produced in China," Miller said. This is more abundant and easier to recover from Madagascan mines, which are smaller scale than those in China.

"Demand from China has been improving in line with the growth of the expandable graphite market, which may lead to tightness if imports from Madagascar are not scaled appropriately," Miller added.

Elsewhere, mines are reopening as markets recover from COVID-19. Graphite miner Syrah Resources (ASX:SYR,OTC Pink:SYAAF) reopened at 15,000 tonnes per month in March and has kept its output more flexible than before. Meanwhile, Chinese imports from Mozambique remained low through to May.

"Madagascan production is ramping up and flowing into China. Tirupati Graphite (LSE:TGR) is expected to bring more capacity online soon in Madagascar," Shaw pointed out. "Other ex-China projects are in the final stages of development and could potentially enter the market in 2021/2022."

Graphite market update: What’s ahead

After a relatively stable first half of the year, investors are looking for cues as to what could move graphite prices going forward.

Shaw is expecting to see some steadying of prices in Q3 as mines in China continue to reopen following investigations earlier in the year and as the market stabilizes.

“This depends of course on the speed of the continued recovery in the battery sector,” she noted. “Prices are typically expected to rise in Q4 as scheduled winter closures restrict supply.”

When asked about factors investors should consider as the second half of the year begins, Miller said the ramp up of Syrah Resources’ sizeable Balama graphite operation in Mozambique will be an important supply-side factor to watch. “Otherwise, cell production and EV sales statistics globally are important to monitor on the demand side, as the battery market solidifies its position as the primary growth market for natural flake graphite demand,” he added.

For Shaw, on the demand side, investors should watch for a return to real long-term trends following the COVID rebound. “We are keen to see what happens with EV uptakes and crude steel production both inside and outside China,” she added.

On the supply side, China as always is the region to watch. “For graphite this means how much it looks to shift towards imports through the remainder of 2021, and what happens in terms of further environmental inspections/closures, which may happen unexpectedly,” she said. “Such closures could speed up China’s desire for foreign supply and, in the short term, drive up prices worldwide.”

Commenting on the challenges faced by miners in today’s market, Miller said pricing is key. “While we saw an uptick in flake graphite pricing during late 2020, prices have begun to settle at subdued levels due to ongoing difficulties in shipping flake graphite as a material, squeezing producer margins,” he said.

“As a result of the significant extra costs and logistical delays associated with shipping at the moment, flake graphite consumers globally have been unwilling to accept increases in contract or spot pricing.”

Shaw said environmental, social and governance concerns are the largest headache for junior miners, and could lead to significant changes in how natural graphite is processed for the battery industry.

"Battery/EV consumers want to know that their supply chain is sustainable. This is encouraging downstream production of spherical graphite with low/zero HF, much of which is being developed outside China," she said. "The jury is still out on if any of this can enter commercial-scale production at a competitive rate to China, or if a premium will be paid by the consumers to ensure sustainability."

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Securities Disclosure: I, Priscila Barrera, hold no direct investment interest in any company mentioned in this article.

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Graphite Outlook 2022: Demand from Battery Segment to Remain High

What's the graphite outlook for 2022? Market watchers explain what happened last year and what factors to watch over the next 12 months.

Click here to read the previous graphite outlook.

Graphite is an essential raw material used in electric vehicle (EV) batteries, and as sales of EVs grow, market watchers believe demand for the metal will surge.

Despite discussions about battery chemistry changes, many experts think graphite will remain a dominant element in EV batteries for at least the next decade. Both synthetic graphite and natural graphite, in the form of the intermediate product spherical graphite, are used in the anodes of lithium-ion batteries.

Here the Investing News Network (INN) looks at the key trends in the graphite market in 2021 and what the graphite outlook is for 2022, with commentary from experts in the space.

Graphite trends 2021: Shipping and power cost challenges

After a tumultuous 2020 during which supply chains were put to the test as economies shut down due to the COVID-19 pandemic, graphite kicked off 2021 on a bright note.

Early in the year, prices for natural flake graphite were slightly higher than expected as a result of unexpectedly strict environmental investigations and closures in China, Suzanne Shaw of Wood Mackenzie told INN back in July.

“There was also considerable shipping disruption early on in the year, with containers and vessels not where they should be as routes reopened post-COVID,” she said. “Limited availability was prioritized for higher-value cargos, with lower-value raw materials flows disrupted. This situation subsided through Q2.”

Pricing was relatively flat during the first six months of 2021, according to Benchmark Mineral Intelligence data.

“Prices for +100 mesh flake concentrate, across all purities, have moved upward by around 5 to 10 percent year-to-date, while pricing for all other grades has moved less than 5 percent so far this year due to continued structural oversupply in the graphite market,” George Miller, an analyst at the firm, told INN at the end of H1. “Moreover, the global shipping situation at the moment is hindering upward price pressure.”

Prices took a turn in August, jumping on the back of the energy crisis, which hit producers and disrupted output. Battery grades were particularly affected by rising power costs, as both the manufacturing of synthetic graphite and the processing of spherical graphite from natural flake are known for high levels of energy consumption.

In terms of supply, Chinese production was expected to ramp up to meet rising domestic battery demand, as there is still a lot of overcapacity in China.

“However, the overall trend is that China is showing less appetite on the raw material side and investing in higher-value downstream industries rather than exploration/mining across most mineral sectors,” Shaw said at the end of H1. “It will continue to increase its own imports of flake graphite.”

All in all in 2021, the demand recovery in the battery sector was more robust than expected following the pandemic, Shaw recently told INN.

“The main surprise was disruption to Chinese supply in the second half of the year because of power shortages,” she said.

The power issues hit just at the time that graphite consumers usually build up stocks ahead of winter time closures.

“While we believe the power issues had already begun to subside late in 2021, high prices for graphite have sustained during the winter months,” Shaw said. “Average Chinese flake graphite prices increased by 25 percent between May and December last year. We expect power rationing to last until Q2 2022.”

Graphite outlook 2022: Supply and demand

At the end of 2020, analysts were expecting graphite demand from the battery segment to continue rising on the back of increased EV sales, with growth opportunities for both synthetic and natural graphite.

In 2022, Wood Mackenzie is expecting to see very strong growth in batteries, while most traditional steel-based applications will see much slower growth because of slowdown in the Chinese market.

"The exception is electric arc furnace (EAF) steel electrodes which will continue to see growth with the shift to EAF steel methods in China, India and other Asian countries," Shaw said.

Demand for batteries will rise across all the main regions, but especially in China.

"Overall, we expect the total lithium-ion battery market to grow by 35 percent in 2022 to 602 GWh," Shaw said. "Such large growth will allow room for significant rises in both natural and synthetic graphite."

Benchmark Mineral Intelligence data shows demand for natural graphite from the battery segment amounted to 400,000 tonnes in 2021, with that number expected to scale up to 3 million tonnes by 2030. Demand for synthetic graphite came to about 300,000 tonnes in 2021, and is expected to increase to 1.5 million tonnes by 2030.

“We do expect recycling to plug some of these gaps, but this isn't really likely to reach the necessary scale until post-2030,” Miller said in a December webinar. “So at the moment, the focus is really on synthesizing and mining this material as quickly as possible to meet the demand that we might see into the future.”

By volume, graphite is one of the most important elements in any EV battery — there are between 50 and 100 kilograms of graphite, whether synthetic or natural, present within each vehicle.

“We can really see the sector growing progressively to around 15 times the demand we see today by 2030, outpacing moderate growth and demand from industrial applications,” Miller said. “Unlike some of the other critical mineral markets, there is still time for both the natural and synthetic graphite market deficits to be redressed — so long as adequate funding is provided for junior miners in the near term."

That said, it's important to note that only certain types of natural graphite supply are relevant to the lithium-ion supply chain and can be qualified for it.

“This is really the biggest challenge in using natural graphite as a battery input,” Miller said. “This has the potential to exclude further capacity from projects in development.”

The expert noted that if all planned supply reaches the market, it would have the potential to balance out demand up to 2029 to 2030, but with these limitations on which material can be qualified, the story takes a different direction.

“The primary limitation here is that the mesh size inputs for the battery supply chain must be fine to medium flake,” Miller said, adding that consistency and high purity, somewhere around 94 to 95 percent carbon, are also key. “Flake graphite for the lithium-ion supply chain must have low levels of impurity in order to avoid compromising the quality and longevity of the end product.”

Similarly, Shaw said the main challenge for graphite miners is getting the processing right.

"It can take some time to ramp up to desirable rates at the right flake size distribution and the right carbon grade," she said. "Those (graphite miners) looking at battery grades must also get their product qualified by the battery industry which can be a long and difficult process."

In terms of supply of natural graphite, China will continue to play a dominant role in supply and will strongly increase its output.

"However, China’s proportion of global supply is likely to ease as new supply comes on in Africa and other parts of the world," Shaw said. "China is keen to move away from mining to downstream battery grade products that are higher value and its imports of flake graphite are increasing."

Graphite outlook 2022: What's ahead for prices and factors to watch

As the new year begins, Wood Mackenzie believes prices will continue to rise early on in the year, at least until production reopens following Chinese new year celebrations.

"Prices could then ease somewhat in the middle of the year before rising again with winter shutdowns," Shaw said. "In the longer term, prices are expected to continue rising with increasing demand and a tightening market, until new capacity can be brought online."

A trend most graphite investors follow is the market share for natural graphite versus synthetic graphite. According to Benchmark Mineral Intelligence, synthetic graphite anodes today account for the majority of market share and approximately 57 percent of the anode market.

“Going forward, we do expect this to shift in the direction of natural graphite anodes to around a 50/50 balance for a multitude of reasons,” Miller said. Those reasons include tight graphitization capacity, higher costs for synthetic graphite anode material and the current environmental shortcomings of the synthetic graphite supply chain.

Wood Mackenzie also expects both natural and synthetic graphite to continue to play an important role in battery anodes.

"There is room for significant growth in both markets," Shaw said. "We are forecasting synthetic graphite demand to grow at a slightly higher rate than that of natural in batteries."

Another key trend for graphite investors to watch in the new year is how western automakers keep up with China, which has become the dominant player in all steps of the anode supply chain.

Interestingly, before 2021 came to an end, US-based Tesla (NASDAQ:TSLA) made a move to secure graphite supply from top graphite producer Syrah Resources (ASX:SYR,OTC Pink:SYAAF).

The ASX-listed company will process graphite from its Balama mine in Mozambique at its Louisiana plant, and will supply the EV maker with anode graphite material for an initial four year period. Tesla also has an option to offtake additional volume subject to Syrah expanding its capacity beyond 10,000 tonnes per year.

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Top Canadian Graphite Stocks

Which graphite stocks have gained the most so far this year? These five companies on the TSX and TSXV are up the most year-to-date.

Click here to read the previous top Canadian graphite stocks article.

As the electric vehicle (EV) revolution continues to move forward, many market watchers expect increasing EV sales to drive demand for graphite, a key metal used in lithium-ion batteries.

Even though pricing for the commodity has been disappointing for some investors over the past few years, interest in graphite remains strong, and a number of Canadian graphite stocks saw impressive year-to-date gains in 2021.

Below is a look at 2021's top graphite stocks on the TSX and TSXV. Data was obtained on December 29, 2021, using TradingView's stock screener, and all companies listed had market caps above C$10 million at that time.

1. South Star Battery Metals

Year-to-date growth: 510 percent; current share price: C$0.31

South Star Battery Metals (TSXV:STS) is focused on acquiring and developing battery metals projects in the Americas with near-term production potential. The company's main asset is its Santa Cruz graphite project in Brazil, where large-scale pilot plant testing has been successfully completed. South Star is aiming to reach Phase 1 production at the property in the fourth quarter of 2022, pending financing.

Shares of South peaked at C$0.35 on November 12, not long after the company agreed to key terms for a proposed earn-in agreement for the Ceylon graphite project in Alabama. The deal became binding in early December, and South Star now has the right to earn a 75 percent stake in Ceylon from current owners

Hexagon Energy Materials (ASX:HXG) and US Critical Minerals. Further details were released in mid-December.

2. Gratomic

Year-to-date growth: 323.53 percent; current share price: C$1.44

Exploration and mining company Gratomic (TSXV:GRAT) has two graphite projects: its flagship Aukam property located in Namibia, and its Buckingham project in Quebec, Canada.

Gratomic has two offtake deals for Aukam, which covers a historical vein graphite mine, and the company is solidifying plans to micronize and spheronize graphite from the asset. It plans to start fulfilling its two contracts in 2022, which is also when it expects to achieve full operational capabilities at Aukam.

The company's share price reached its 2021 peak of C$1.76 on March 31. Gratomic released a slew of news around that time, but March 31 was the day it revealed plans to build a pilot processing facility and said it would be entering into a cooperative agreement with Forge Nano. Gratomic said Forge would help plan and develop the processing facility, and complete atomic layer deposition on graphitic material provided by Gratomic.

3. Graphite One

Year-to-date growth: 314.29 percent; current share price: C$2.03

Graphite One (TSXV:GPH) is focused on becoming a US producer of high-grade coated spherical graphite primarily for the lithium-ion EV battery market. The company plans to develop its Graphite Creek deposit, located in Alaska, into a vertically integrated operation, and is aiming to begin a prefeasbility study for the property in Q1 2022.

In a press release highlighting its 2021 activities, Graphite One states that among other achievements, it raised over C$30 million, completed a drill program and moved forward with research and development efforts related to multiple advanced graphite materials. Its highest 2021 share price came on November 18 at C$2.39.

4. NextSource Materials

Year-to-date growth: 253.33 percent; current share price: C$3.18

NextSource Materials (TSX:NEXT) is a strategic materials development company that is working on bringing its Madagascar-based Molo graphite project into production. Molo is the only project with SuperFlake graphite, and construction is currently underway at the asset, with commissioning set for mid-2022.

Shares of NextSource soared to their highest level in 2021 on February 16, reaching C$4.80. Six days prior, the company entered into a binding agreement for a US$29.5 million financing package with Vision Blue Resources, a private investment firm run by Sir Mick Davis, formerly of Xstrata. NextSource said at the time that the funds would be used to bring Molo into full production. The company has been active through 2021, and most recently said in mid-December that fabrication and assembly of the processing plant for Phase 1 at Molo has been completed.

5. Northern Graphite

Year-to-date growth: 191.23 percent; current share price: C$0.83

Northern Graphite (TSXV:NGC) describes itself as a mineral development and technology company. Its main asset is the Bissett Creek graphite project in Ontario, which is an advanced-stage project with a full feasibility study and major mining permit. According to an independent study cited by Northern Graphite, Bissett Creek will have the highest margin of any existing or proposed graphite deposit.

Shares of Northern Graphite hit a 2021 high of C$0.88 on November 29, several days before the company signed binding purchase and sale agreements to acquire two graphite assets from Imerys Group: the producing Lac des Iles graphite mine in Quebec, and the Okanjande graphite deposit/Okorusu processing plant in Namibia. The transaction will make Northern Graphite the only North American and the world's third largest non-Chinese graphite-producing company. Further information was provided in a December 30 update.

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Editorial Disclosure: NextSource Materials, Northern Graphite and South Star Battery Metals are clients of the Investing News Network. This article is not paid-for content.

Top Battery Metals Stocks on the TSX and TSXV

What are the top battery metals stocks? Here's a look at the battery metals companies with the biggest year-to-date gains in 2021.

Click here to read the previous top battery metals stocks article.

Battery metals such as lithium, cobalt and graphite are essential to the lithium-ion batteries used to power electric cars, with demand expected to increase in the coming decades.

As the energy revolution continues to unfold, automakers are becoming increasingly aware of the need to secure these raw materials in order to accomplish their ambitious electrification goals.

For investors interested in jumping into the battery metals space, the Investing News Network has gathered the top battery metals stocks on the TSX and TSXV with year-to-date gains, including lithium, cobalt and graphite, with a special mention to nickel. Only companies with market caps above C$10 million are included.

All data was obtained via TradingView's stock screener on December 29, 2021, for lithium, cobalt and graphite, and on December 7, 2021, for nickel. Read on to learn more about the top battery metals stocks of 2021.

Lithium

1. Arena Minerals

Year-to-date gain: 1,433.33 percent; current share price: C$0.46

Arena Minerals (TSXV:AN) has two key lithium assets in Argentina: a 65 percent interest in the Sal de la Puna project, which covers about 11,000 hectares in the Pastos Grandes basin, and the Antofalla lithium brine project, which falls across 6,000 hectares in the Salar de Antofalla. Aside from those lithium properties, the company has developed a lithium brine processing technology, and has copper-focused assets located in Chile.

2. Argentina Lithium & Energy

Year-to-date gain: 462.5 percent; current share price: C$0.45

Argentina Lithium & Energy (TSXV:LIT) intends to serve rising demand from the battery sector by acquiring and advancing high-quality lithium projects in Argentina toward production. Its assets include the Incahuasi lithium project, which spans more than 25,000 hectares in the Incahuasi salar, and the Antofalla project, which covers about 9,000 hectares of mining claims in the Salar de Antofalla, plus an additional 5,380.5 hectares under option.

Argentina Lithium's Antofalla project is a separate asset from Arena's Antofalla project.

3. Frontier Lithium

Year-to-date gain: 445.21 percent; current share price: C$1.99

Emerging lithium mineral and chemicals company Frontier Lithium (TSXV:FL) is aiming to support North America's electric vehicle and battery supply chains by becoming a manufacturer of battery-quality lithium hydroxide. Its main asset is the Ontario-based PAK lithium project, which is located in the province's Electric Avenue.

Cobalt

1. Fortune Minerals

Current share price: C$0.14; year-to-date gain: 80 percent

Fortune Minerals (TSX:FT) is developing its NICO cobalt-gold-bismuth-copper project, located in Canada's Northwest Territories. The plan is for bulk concentrate from NICO to be shipped to a planned metals processing plant in Southern Canada. According to the company, it is positioned to become a Canadian producer of battery-grade cobalt chemicals with gold and bismuth co-products. Aside from NICO, Fortune holds the Sue-Dianne copper-silver-gold deposit and other exploration projects in the Northwest Territories. It also has the right to repurchase the Arctos anthracite coal deposits in Northwest BC.

2. Jervois Global

Current price: C$0.52; year-to-date gain: 35.06 percent

Jervois Global (TSXV:JRV) describes itself as a vertically integrated cobalt company, although it also has exposure to nickel and copper through its development and refinery asset portfolio.

The company, which is listed in Australia as well as Canada, has a set of geographically diverse assets: the construction-stage Idaho Cobalt Operations in Idaho, US; the development-stage Nico Young deposit in Australia; and the largest nickel-cobalt refinery in Latin America, the São Miguel Paulista refinery in São Paulo, Brazil.

3. Battery Mineral Resources

Current price: C$0.44; year-to-date gain: 33.33 percent

Battery Mineral Resources (TSXV:BMR) has an extensive portfolio of assets located in Canada, the US, Chile and South Korea. The company describes itself as an emerging producer of battery minerals, and has projects with exposure to metals including cobalt, lithium, graphite, silver and copper.

Looking specifically at the company's cobalt properties, Battery Mineral controls a land package in the Ontario Cobalt Belt that covers 1,100 square kilometers and hosts multiple high-grade targets. It bills itself as the largest claim holder across all minerals in the belt, which is a richly endowed mining region.

In Idaho, the company owns 434 unpatented mining mineral claims across three 100 percent owned properties containing 14 significant cobalt prospects and covering an area of 38 square kilometers.

Graphite

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Nickel

1. Noront Resources

Current share price: C$0.73; year-to-date gain: 294.5 percent

Noront Resources (TSXV:NOT) has built a diverse project portfolio in a resource-rich region of Ontario's James Bay Lowlands known as the Ring of Fire. The company is developing its high-grade Eagle's Nest nickel-copper-platinum-palladium deposit. Its asset base also includes the Blackbird, Black Thor and Big Daddy chromite deposits.

2. North American Nickel

Current share price: C$0.51; year-to-date gain: 229.03 percent

North American Nickel (TSX:NAN) is an exploration company with 100 percent owned properties in Greenland and Canada. In 2019, the company became a founding shareholder in Premium Nickel Resources, a private Canadian company geared at providing direct exposure to nickel-copper-cobalt opportunities in Southern Africa.

The Maniitsoq property in Greenland is a camp-scale, permitted exploration project that is 3,048 square kilometers in size and covers numerous high-grade nickel-copper and cobalt sulfide occurrences associated with norite and other mafic-ultramafic intrusions of the Greenland Norite Belt. The Post Creek/Halcyon property in Sudbury, Ontario, is strategically located just 2 kilometers away from the past-producing Podolsky copper-nickel-precious metals sulfide deposit belonging to KGHM (WSE:KGH).

3. Canada Nickel Company

Current share price: C$3.76; year-to-date gain: 93.81 percent

Canada Nickel Company (TSXV:CNC) is advancing its Crawford nickel-cobalt sulfide discovery, which has large-scale potential and is situated in the Timmins mining camp adjacent to major infrastructure. Canada Nickel has applied in multiple jurisdictions to trademark the terms NetZero Nickel, NetZero Cobalt and NetZero

Iron, and is pursuing the development of processes to allow the production of net zero carbon nickel, cobalt and iron products.

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